



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,113	05/31/2006	Jing-Ming Jong	PHUS030510	2878
28159 7590 06/22/2009 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 Briarcliff Manor, NY 10510-8001				
EXAMINER NGUYEN, HIEN NGOC				
ART UNIT 3768		PAPER NUMBER		
MAIL DATE 06/22/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/596,113

**Applicant(s)**

JONG, JING-MING

**Examiner**

HIEN NGUYEN

**Art Unit**

3768

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 5, 10-20 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/083)
- Paper No(s)/Mail Date 05/31/2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1-4, 6-9 and 21 drawn to a method and a system for automatically adjusting the relationship between image resolution and real time frame rate of an ultrasound system.

Group II, claims 10-20 and 22 drawn to a method and a system for automatically adjusting the relationship between image resolution and the depth of penetration of an ultrasound system.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature in all groups is acquiring ultrasound images. This element can not be a special technical feature under PCT Rule 13.2 because the element is shown in the prior art. US 2002/0072670 discloses acquiring ultrasound images (see claim 14).

During a telephone conversation with Mr. Brinton Yorks, Jr. on Tuesday 06/02/09 a provisional election was made without traverse to prosecute the invention of Group 1, claims 1-4, 6-9 and 21. Affirmation of this election must be made by applicant in

replying to this Office action. Claims 10-20 and 22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hossack et al. (US 5,873,830) and in view of Gilbert et al. (2003/0028113).

Regarding claim 1, Hossack discloses a method for automatically adjusting the relationship between image resolution (Res) and real time frame rate (Speed) of an ultrasound system comprising:

- acquiring a plurality of ultrasound images over time; (see col. 3, lines 1-9).
- sensing the relative motion between temporally different ultrasound images and increasing the image resolution and decreasing the frame rate in response to relatively less sensed motion or decreasing the image resolution and increasing the frame rate in response to relatively greater sensed motion; (see abstract, col. 3, lines 28-40, col. 5, lines 31-39 and col. 7, lines 5-19).

However, Hossack does not disclose a Res/Speed display of the relationship between image resolution and frame rate and automatically adjusting Res/Speed display in correspondence with a change made to the image resolution and/or

frame rate. Gilbert discloses a Quality/Speed display of the relationship between image resolution and frame rate and automatically adjusting Res/Speed display in correspondence with a change made to the image resolution and/or frame rate (see Fig. 15D, top right corner). Image quality and image resolution is the same. Quality/Speed is the same as Res/Speed. When the frame rate and the resolution change the Quality/Speed bar automatically change to the correct setting.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hossack's method to include a Res/Speed display of the relationship between image resolution and frame rate and automatically adjusting Res/Speed display in correspondence with a change made to the image resolution and/or frame rate as taught by Gilbert because the Res/Speed display is a visual control panel that make it easier for user to see and change the image resolution and speed.

Regarding claims 2-4, Hossack discloses:

- wherein sensing comprises calculating the correlation of the pixel content of temporally different ultrasound images, wherein a relatively high correlation corresponds to relatively less motion and a relatively low correlation corresponds to relatively greater motion; (see col. 11, lines 1-15). What Hossack discloses is the same as what is claim. Comparing and calculating intensity values of pixel in the images to determine the motion in the images.

- wherein sensing comprises sensing relative motion with a probe motion sensing device; (see col. 19, lines 30-47 and col. 20, lines 15-30).
- wherein sensing comprises sensing relative motion by analyzing the image content of successive ultrasound images; (see col. 11, lines 1-5).  
Hossack discloses analyze or calculate intensity values of pixels for successive image frames to determine motion. Intensity values of pixels are content of the ultrasound images.

Regarding claim 6, Gilbert discloses:

- wherein the Res/Speed display includes a user adjustable setting which enables a user to manually balance the relationship between image resolution and frame rate of the ultrasound system; (see Fig. 15D). The user can manually adjust setting to image resolution and frame rate by dragging the arrow in the Quality/Speed bar from left to right or right to left.

Regarding claims 7-9, Hossack discloses:

- wherein manual adjustment of the Res/Speed display adjusts the manner in which subsequent automatic adjustments to the balance between image resolution and frame rate will be made; (see abstract and col. 5, lines 31-39 and col. 6, lines 39-45). Hossack discloses automatically adjust the parameters that cause a change in the image resolution and frame rate. This is automatic adjustments to the balance between image resolution and frame rate.

- wherein the frame rate is changed by changing at least one of the transmit beam density, multiline order, number of focal zones, or number of transmit pulses; (see col. 2, lines 45-52). These parameters change cause the frame rate to change.
- wherein the image resolution is changed by changing the spatial sampling of the image field; (see col. 22, lines 38-47). This is spatial sampling to improve image resolution.

Regarding claim 21, Hossack discloses an imaging system comprises:

- a probe including an array transducer; a transmitter coupled to apply drive signals to the array transducer; a receiver coupled to process signals received by the array transducer; a display coupled to the receiver which displays received ultrasound images; a sensor coupled to the probe which senses relative motion in the image field; (see Fig. 1, elements 125, 130, 135, 185 and col. 17, lines 12-17).
- a sensor that provide a relative balance between image resolution and flame rate, wherein the transmitter is responsive to the sensor for adjusting the flame rate of the ultrasound images; (see col. 3, lines 55-62 and col. 4, lines 55-60). A sensor for sensing motion and as motion change image resolution and frame rate change. The sensor is in the transducer and the transmitter is also part of the transducer. It is inherent that the transmitter adjusts the frame rate in respond to the sensor



because as motion change the frame rate needs to change to ensure a good quality image.

However, he does not disclose a Res/Speed display. Gilbert discloses a Quality/Speed display of the relationship between image resolution and frame rate (see Fig. 15D). Image quality and image resolution is the same.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hossack's system to include a Res/Speed display of the relationship between image resolution and frame rate as taught by Gilbert because the Res/Speed display is a visual control panel that make it easier for user to see and change the image resolution and speed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIEN NGUYEN whose telephone number is (571)270-7031. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. N./  
Examiner, Art Unit 3768

/Long V Le/  
Supervisory Patent Examiner, Art Unit 3768